soul. All the use money can be put to is to purchase comfort and enjoyment in this life; therefore, as you are an enemy to comfort and enjoyment, where is the use in accumulating cash? In a word, why don't you go off somewhere and die, and not be always trying to seduce people into becoming as ornery and unlovable as you are yourselves by your ceaseless and villainous moral statistics.'

"I am convinced that these statistics must have been offered to Mark Twain by some vacation expert. The world cataclysm, which is subsiding, has produced an enormous amount of flotsam and jetsam which some are picking and adding up and presenting as normal statistics. One of the common characteristics of these masquerading Aladdins who are going around offering to exchange new lamps for old is a patronizing air towards the medical profession. It has often been observed that some who use the medical ladder to climb upward, 'once they attain the utmost round then unto the ladder turn their backs.' It requires a level head to preserve proper poise among the dizzy heights," concluded the Doctor.

EDITORIAL COMMENT.

There is no use in fighting the inevitable. It is true that the only argument against the north wind is an overcoat. But it is well to be sure the wind is really northern.

Argument seems unnecessary to signalize the importance of the passage by Congress of the Fess bill appropriating the sum of five millions for investigation of influenza and allied disorders. The loss of 500,000 lives in this country alone during the recent epidemic is warrant enough for such need. Determination of the cause of influenza will be followed by the same remarkable results which attended knowledge of the cause and manner of spread of malaria, yellow fever and typhoid. A recrudescence of influenza is to be expected this coming fall. Every public and private health agency should devote itself to this matter and to constructive preparation of a program of action in case of another epidemic.

At present the medical profession is organized on a basis of disease cure rather than disease prevention. This must change at the same time that diagnosis and treatment of special and individual diseases are improving and receiving more and more skilled attention. All public health work pivots on the doctor. He is invariably the one absolutely essential link which cannot be discarded. It is time that the public and the doctor himself recognize this relationship.

Complaints have been received in the State Society office that the State Medical Society roster of members, issued last month, does not contain the names of some doctors who feel that they should have been included. Attention is called to the fact that after March 1st those members of the society whose dues have not been reported to the office of the State Society are delinquent.

Original Articles

TECHNIC FOR THE REMOVAL OF DEAD TEETH.*

By JOSEF NOVITZKY, San Francisco, Cal.

For over five years I have been devoting at least half of each day to laboratory work and investigations in connection with the problems arising from dead teeth. The results of my investigations have repaid me so amply that I have constantly urged other dentists to devote some time to study and experiment, but with no appreciable success. Accounts of my findings have been published repeatedly.[1] These, I thought, would be thankfully received by other dentists who were unwilling or unable to devote any of their own time to independent research.

Instead, they were received at first with violent hostility. Many prominent dentists seemed to resent the fact that my findings did not accord with what had been taught to them and is still being taught to others in dental colleges. My own college offered me no encouragement, and so far as I know encouraged no one to test the truth of my views. One prominent dentist likened my methods to those of the ruthless Hun, but he was prepared to offer no good evidence that my methods were wrong. Opposition was not disappointing. It was stimulating and at times amusing. The disappointing thing was that no one among the thousands who opposed me seemed to be willing to devote a little time in gaining evidence either in favor of or against what I held forth as scientifically proved facts. In matters of fact, capable of clear proof or disproof, I was opposed by unsupported opinions exclusively.

My first encouragement came from Dr. Stanley Stillman to whom I am indebted for the opportunity of witnessing the work at the surgical clinic at the Lane Hospital, San Francisco, 1912. Dr. Stillman's help made it possible for me to acquire the basic surgical knowledge necessary to bridging the gap between surgery and ordinary dental practice.

My first opportunity to work in well-equipped modern laboratories came to me from Leland Stanford Jr. University. To Dr. F. E. Blaisdell, Professor of Surgery in the Medical Department of this university, I am indebted for the photographs of my anatomical work used in this article. To him I am also greatly indebted for invaluable

* Anatomical work done in the Laboratory of Surgical Pathology, Leland Stanford Jr. University.

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California State Journal of Medicine—November, 1915.
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guidance and assistance in the research in which I am still engaged.

Of late, one by one, the things discovered and announced by me have been appearing in dental journals in the writings of other men. But only one man has seen fit to accord me a word of credit or commendation. This one exception is Dr. John S. Marshall, who confirmed the findings of my work on the inferior dental canal.

It was not to be expected, of course, that the great body of busy practicing dentists should immediately accept the fact that all devitalized teeth are dead and the fact that all dead teeth, no matter how or by whom they are treated, will be infected within six months of the time of devitalization, if they are permitted to remain in the jaws. The busy dentist naturally turned to the colleges and the men regarded as leaders of the profession. When he found them still teaching young men to devitalize and treat teeth, he felt perfectly safe in his behind-the-times methods. He found dental colleges not only unwilling to acknowledge the truth of definitely proved facts but also unwilling even to attempt to disprove them.

On the other hand, it was not to be expected that men who did accept my views should publish them as their own. It was certainly not to be expected that a dental journal should give space to an article emphatically claiming originality for something borrowed from me and already published by me in the same journal. The most prominent place in the Pacific Dental Gazette for May, 1919, is given to an article in which the author makes a special point of claiming originality for the view that infection remaining in the jaws after removal of a dead tooth may cause such absorption of the alveolar process as to make it difficult to construct a good denture. The author of the article had brought his wife to me for surgical advice and I had reported the case and pictured it in a slide in the American Journal of Surgery for August-September, 1917.[2] Here I pointed out that incomplete surgery had resulted in loss of Haversian bone and atrophy of the marginal ridges. In various other articles and addresses,[3] some as early as 1915, I have shown how septic retention following incomplete surgery often results in such absorption of alveolar process and flattening of the alveolar ridges as to render the construction of an efficient denture very difficult. In my address before the San Francisco District Dental Society, Oct. 8, 1917, I exhibited plaster models demonstrating this fact. A photograph of one of these models is shown in the accompanying Plate 1.

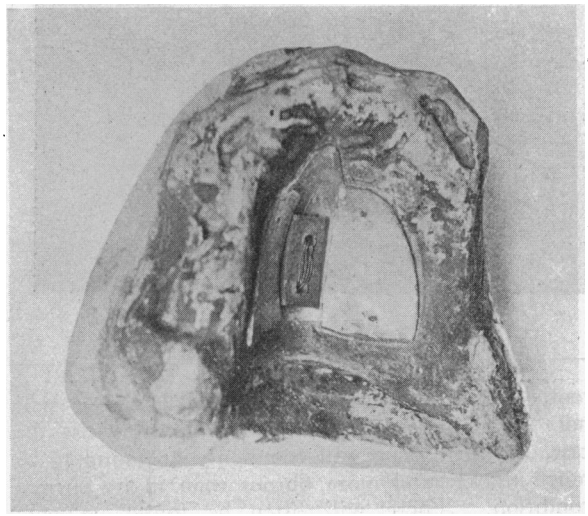

Plate I.

This is a plaster model of a palate in which septic teeth on the left were "pulled." On the right and the anterior portion septic teeth were removed by dissection, also a radical operation on the right antrum was performed. Witness the result: On the left the alveolar ridge has become obliterated through resorption as a result of incomplete surgery and septic retention; on the right rapid healing with some callus formation has followed thorough surgery. This cast shows how future plate work for mastication of food is simplified by thorough surgery.

An interesting side light is thrown on the ethics of dentistry by the consideration of the fact that the editor who was willing to publish the borrowed material claiming originality was unwilling to publish one of my articles, already in proof, unless I would call a dead tooth a devitalized tooth, his plea being that he wished to keep dental literature on a high plane of ethics.

At the present time all men who give the matter of devitalized teeth serious consideration should be willing to grant what I have been persistently maintaining for the past five years; namely, that every devitalized tooth is in every sense of the word a dead tooth, and that every dead tooth, no matter by what method and by what person it is treated, becomes infected within six months of the date of devitalization. When the dental pulp is removed and the apical foramen "closed," a tooth could receive nourishment only by means of or through the cementum which surrounds the root. Although some men still maintain that "between pulp inside and periosteum outside, there is a continuous chain of living plasm," I have shown that normal cementum in man is structureless. There is no way for blood or blood fluids to pass through it. In the careful pathological examination of hundreds of devitalized teeth I have not found a single one that, six months after devitalization, was not infected. No one else has been able to find one. In the face of such evidence, thinking men must accept as a fact the statement that a devitalized tooth cannot be retained in the jaw and aseptically filled without the occurrence of post-operative periapical infection.

One by one dentists and physicians are coming into agreement on the point that a dead tooth is a dangerous source of infection which cannot be retained in the jaw with safety. I have shown how dead lower molars caused inferior dental canal infections with drainage from the inferior dental foramen which resulted in tonsillar phlegmons, Ludwig's angina, and Bell's palsy; how

2 See Slide 24. American Journal of Surgery—August-September, 1917.

3 California State Journal of Medicine—October, 1916.

dead upper molars frequently resulted in septic collections under the antral membrane or in direct perforation of the antrum of Highmore. I have shown, moreover, the inadequacy of mere extraction or pulling of dead teeth on account of the septic granulations which often remain after extraction. Such granulations result in a low grade suppuration with dangerous systemic sequelae and such absorption of alveolar process as to render the making of an efficient plate extremely difficult. (See Plate 1.)

The safe removal of dead teeth, as I have demonstrated many times, demands a surgical operation, the technic of which I have frequently outlined. Now since dentists and physicians are coming to recognize the truth concerning dead teeth, it may be worth while to illustrate the technic of the operation by the following plates:

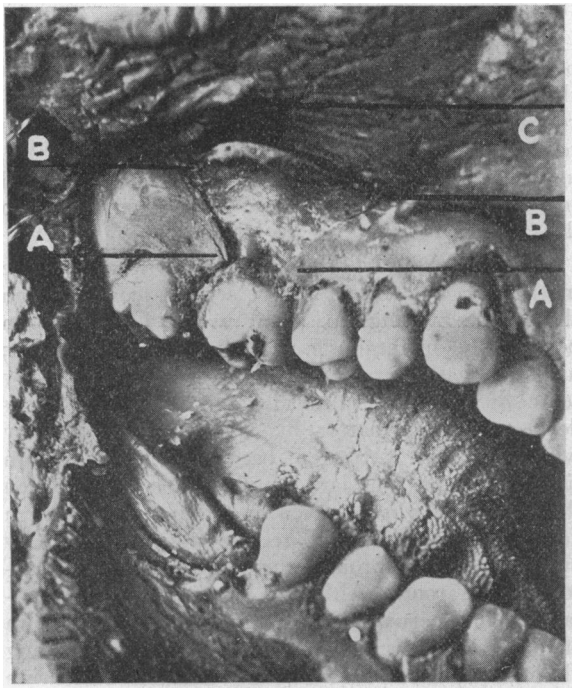

Plate II.

Plate 2 indicates how the incision in the gums should be made in the operation for the removal of the upper first molar. This incision should allow a generous margin of mucous membrane and periosteum at A in order to obviate post-operative recession of the soft tissues from about the necks of the teeth on both sides of the operative wound.

The terminals of the lines of incision are indicated by B. These may be extended out anteriorly and posteriorly if a larger approach is rendered necessary by unanticipated complications. The incision as shown would ordinarily be ample for the removal of the tooth and the necrotic alveolar process and for the exploration of the floor of the antrum immediately above the roots ends. The gingival edge of the flap, C, is pared after the incision has been made in order that there may be a freshly cut surface to be sutured to the lingual side of the wound at the close of the operation. The periosteum and soft tissues composing the flap are lifted free of the bone and held back with a retractor.

Now that part of the outer plate of process which lies over the buccal roots is outlined with chisel and gouge and removed in one piece. The buccal roots are then exposed in situ in the alveolar process. Each buccal root should be cracked free from the root crown by a smart tap with mallet and chisel and hooked out sidewise. The tooth crown held only by the long lingual root is still in position. At this stage of the operation hemorrhage should be under control so that with direct access and vision the apical region of the buccal roots may be curetted thoroughly and examined for perforations into the antrum.

If no perforation leading from the buccal roots is discovered, the side of the lingual socket next to them should be enlarged with the gouge and then the remaining root with the tooth crown should be elevated from the socket. If a lingual perforation is discovered, the antral membrane may be left intact, if this is desirable, as the alveolar process is lifted away from that membrane. Frequently, pus or exudate from a dead

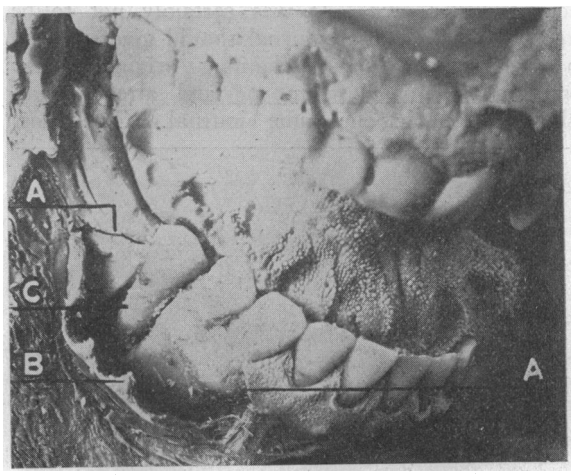

Plate III.

tooth will drain through the thin floor but will not perforate the membrane. If this is the case, the membrane will commonly be found to be much thicker and more fibrous than in its normal condition. There will often be found polypoid tissue involving the antrum cavity immediately above the dead roots.

After all the infected granulation tissue and necrotic debris have been removed, the edges of the opening in the bone should be smoothed with chisel or curette, since sharp bone edges retard post-operative repair. Finally the periosteal flap, C, should be sutured to the inner margin of the mucous membrane.

In Plate 3, A indicates the lines of incision for the removal of a lower right second bicuspid. B is the flap of mucous membrane and periosteum. C indicates the root of the bicuspid after the

outer plate of the mandible has been cut away. The tooth is shown ready to be removed sidewise through the opening in the outer plate.

Plate 4 pictures a tooth socket after the tooth has been removed. It shows how there is direct access to the pathological cavity at A, which is in communication with the inferior dental canal.[4] The stretched and tightly adherent membrane, B, is seen surrounding the orifice of the mental foramen. This membrane incloses the nerve and blood vessels in its sheath.

In this case the incision is large and the soft structures over the vital roots anterior to the second bicuspid are stripped back in order to permit careful dissection and the stripping back of structures surrounding the mental foramen, and in order to make it possible to work without severing the mental nerve or blood vessels. If any structures which are no longer normal are

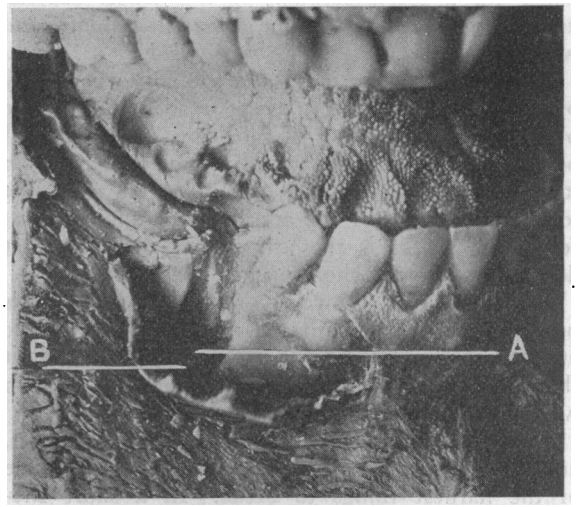

Plate IV.

allowed to remain, they will continue a low grade suppuration and result in atrophy of the surrounding bony parts and in secondary metastatic sequelae. Hence it is commonly necessary to pick away bone forming the wall of the inferior dental canal so that no abnormal structures will be allowed to remain.

Briefly, then, the operation which I have been advocating for the past five years is as follows:—First, the region to be operated is anesthetized with novocain. This permits the work to be done with no pain to the patient and very little shock.

Next, a triangular flap of the gum and periosteum with its apex at the gingival margin of the necrotic root is raised and pulled back. This exposes the outer plate of bone for a little more than the length of the tooth root. But it may be necessary to strip down the gum and periosteum from the healthy tooth on each side of the necrotic one in order to gain more space for operating. In this second case special care must be taken in suturing the gums back to their original position at the end of the operation.

Now part of the outer plate of bone is removed with a chisel; and the cancellous bone and tooth root lie exposed. The tooth should be hooked out sidewise before apical curetting and exploration, if the part of the buccal plate which has been removed does not extend so far as the end of the tooth root. The tooth may be hooked out either before or after apical curetting and exploration, if the part of the buccal plate over the entire root length has been removed.

The tooth and the alveolar septum in multi-rooted teeth should be removed with the chisel, if a cavity is discovered beneath the tooth roots.

When the antrum is involved, the inner plate of bone in the upper jaw may be cut away enough to make it possible to draw the inner flap of mucous membrane and periosteum over to meet the outer flap. But whenever possible the inner plate should be left intact. Bone regeneration does not take place so well in the inner as in the outer plate, when both plates are removed.

An antrum incision is sutured and the cavity is drained through the natural ostium into the nose. Gauze packings should not be used in this work except as mechanical blocks to hemorrhage. If irrigation is necessary, the cavity may be thoroughly irrigated five or six days after operation by means of a canula inserted through the flap from the mouth or through the thin plate of bone under the inferior turbinate of the nose.

In some cases diffuse infection in the Haversian bone will be found associated with chronic changes emanating from dead teeth. Gutta percha cigarette drains, in such cases, will allow serums and discharges to escape until time for the wounds to be closed.

The incision for extensive surgical work on the antrum should take in several teeth on the affected side. In order to gain space adequate for operating it may be necessary to strip back the tissues from both vital and dead teeth. I have under preparation a special paper on antrum cases and my operation on the antrum of Highmore.

An operation for the removal of a dead tooth, especially an operation for the removal of an upper molar and the exploration of the antrum floor or the antrum, like any other surgical operation, should not be performed by one who lacks surgical training and experience. The ordinary dental college offers no opportunity for such training or experience. In some dental colleges, indeed, the professors themselves seem to have arrived at that pleasant stage of anility in which anything new is regarded as harmful and undesirable. They manifest the ultra-conservative tendency to insist on teaching others to think and do precisely as they were taught to think and do. With every indication of self-confidence and self-satisfaction they still lead young men to slaughter teeth and then to treat and fill the dead bodies in spite of clear proofs of the dangers of such practice.

Head Bldg.

[4] California State Journal of Medicine—November, 1915.
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[5] See Pacific Dental Gazette—May, 1915. Here I called attention for the first time to inferior dental canal infections caused by septic teeth.